6676260 "5676260

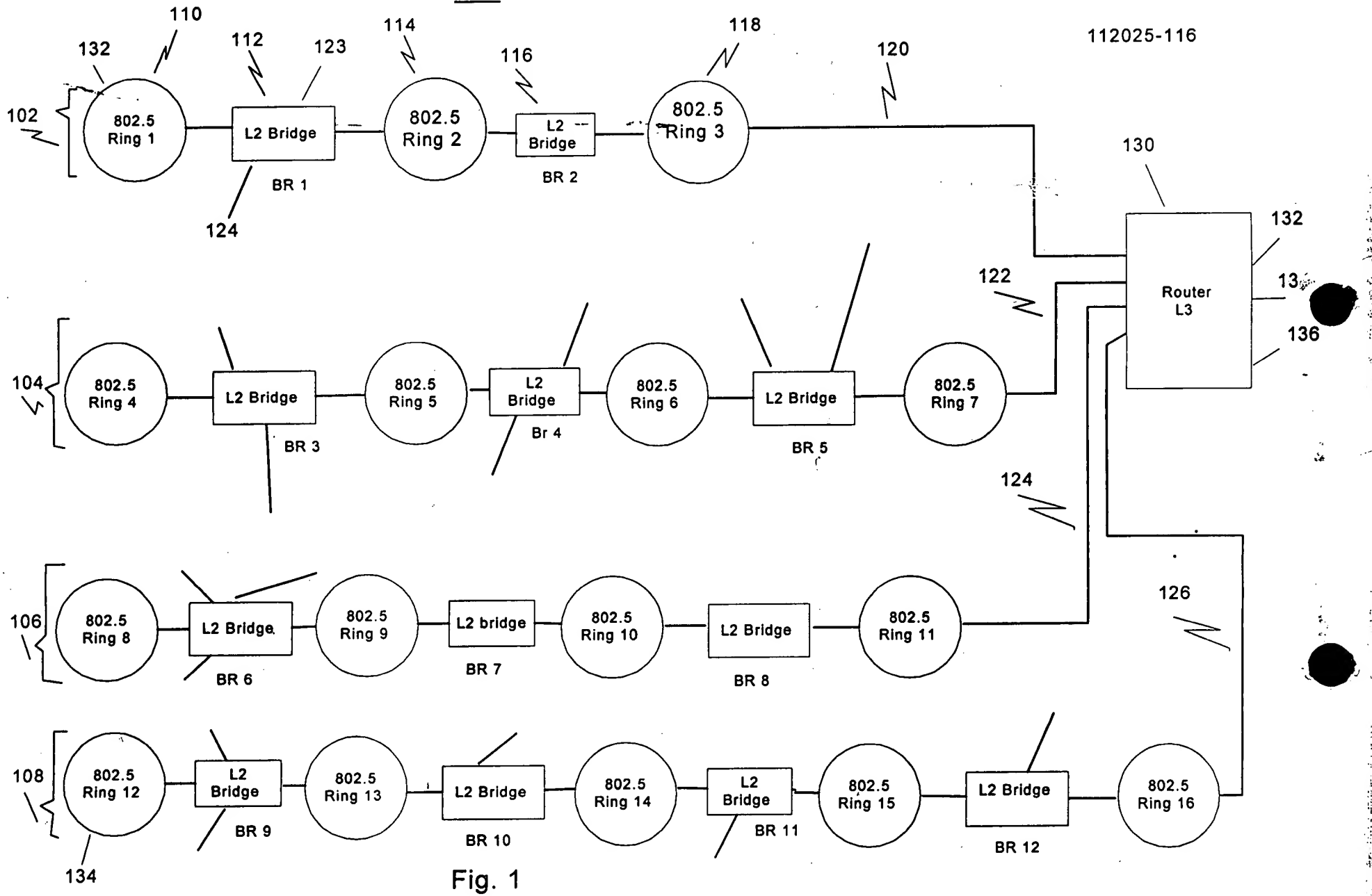


Fig. 1

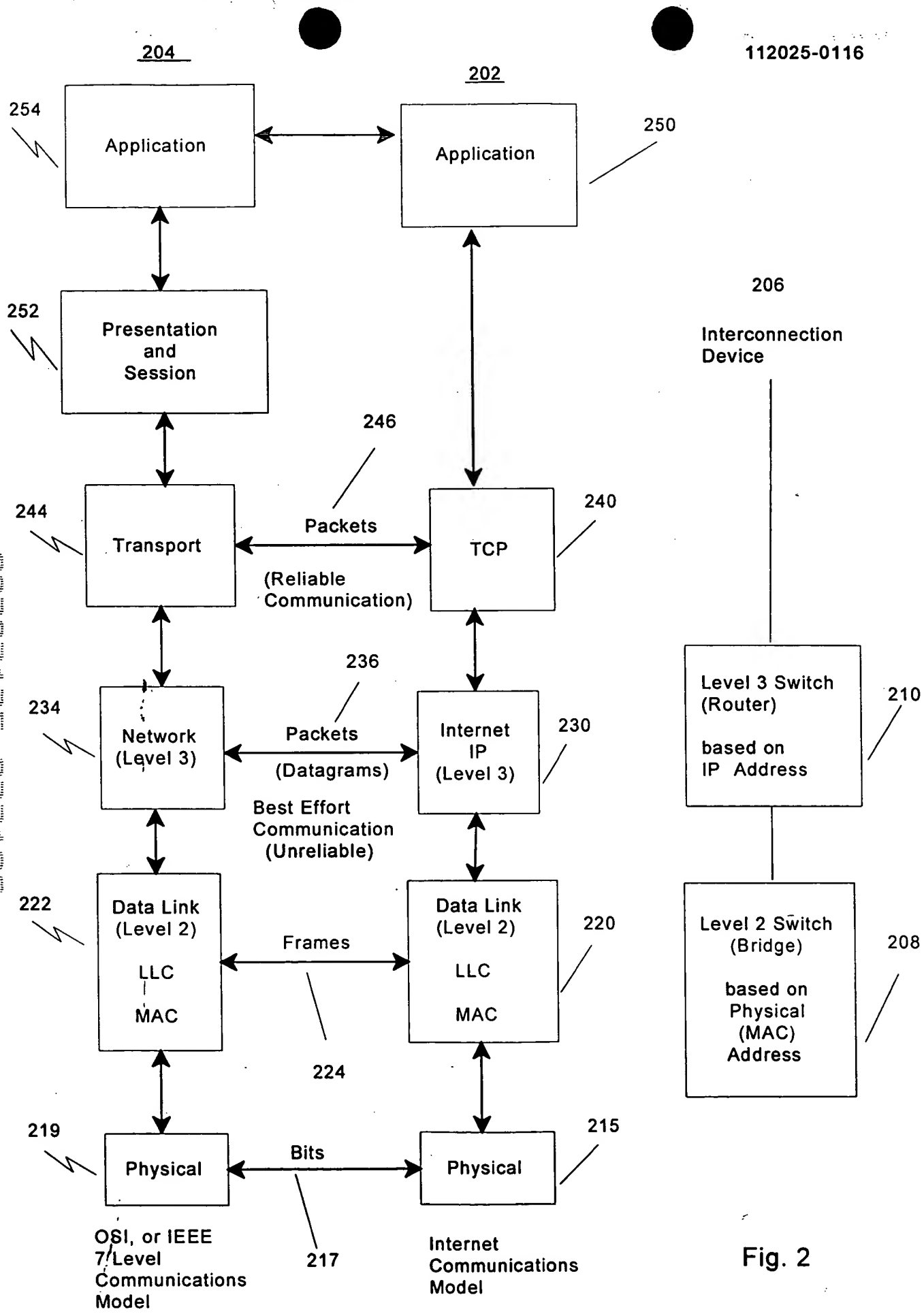
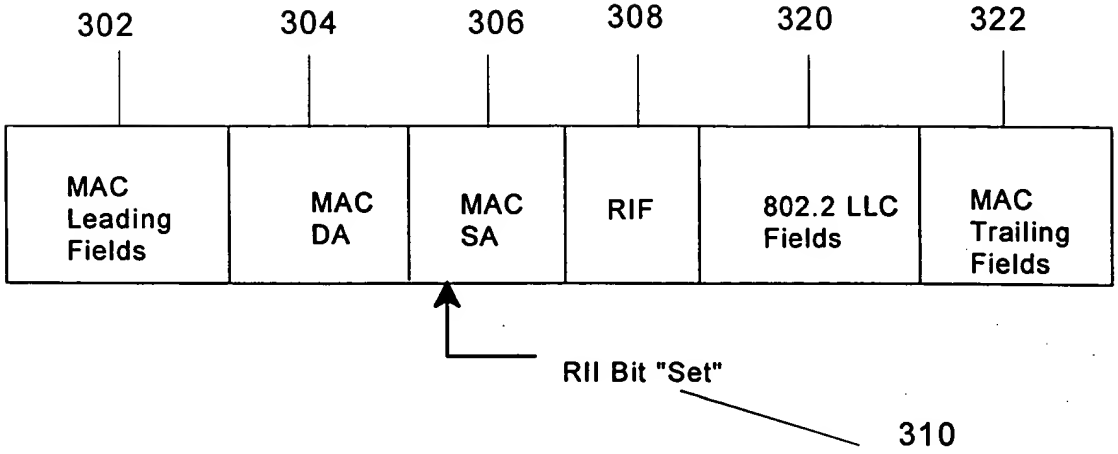

204
202
254
Application
Application
250
252
Presentation and Session
206
Interconnection Device
246
244
Transport
Packets
(Reliable Communication)
TCP
240
236
234
Network (Level 3)
Packets
(Datagrams)
Internet IP (Level 3)
230
Level 3 Switch (Router)
based on IP Address
210
Best Effort Communication (Unreliable)
222
Data Link (Level 2)
LLC
MAC
Frames
224
Data Link (Level 2)
LLC
MAC
220
Level 2 Switch (Bridge)
based on Physical (MAC) Address
208
219
Physical
Bits
Physical
215
217
OSI, or IEEE 7 Level Communications Model
Internet Communications Model

Fig. 2

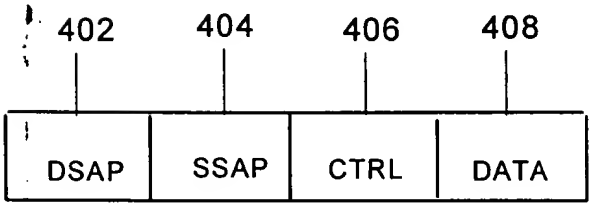
300



IEEE 802.5: Level 2 MAC Frame Fields

Fig. 3

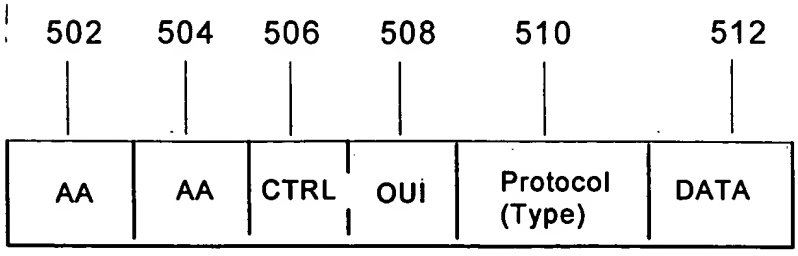
400



IEEE 802.2 LLC Fields

Fig. 4

500



IEEE 802.2 LLC Fields using SNAP SAP option

Fig. 5

600

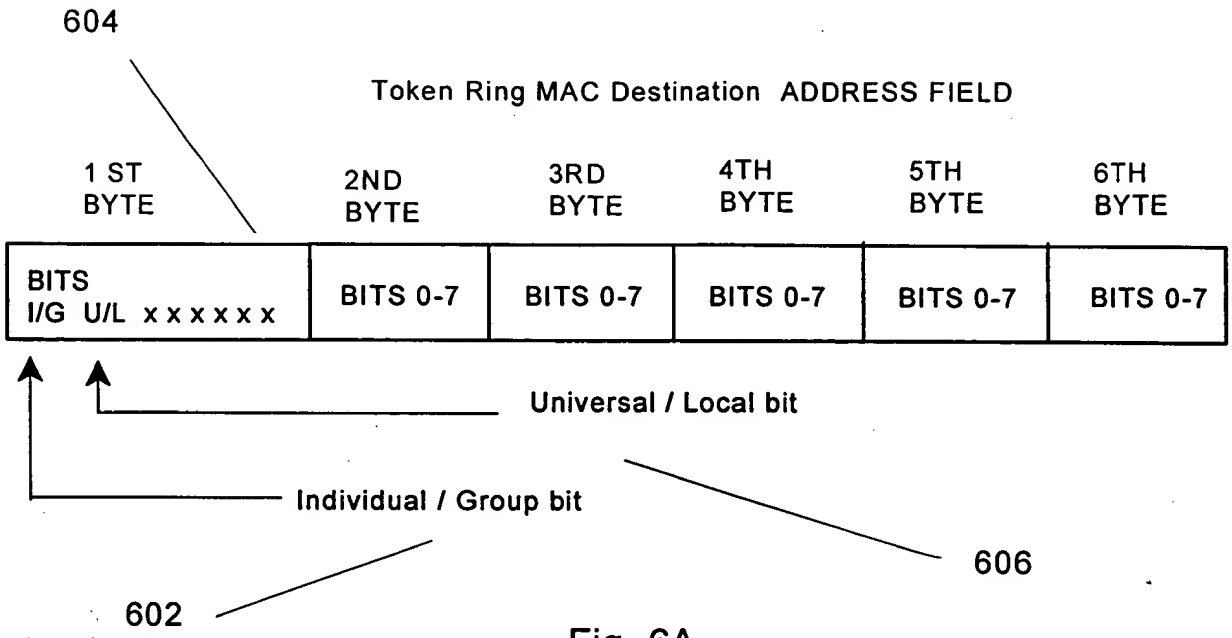


Fig. 6A

620

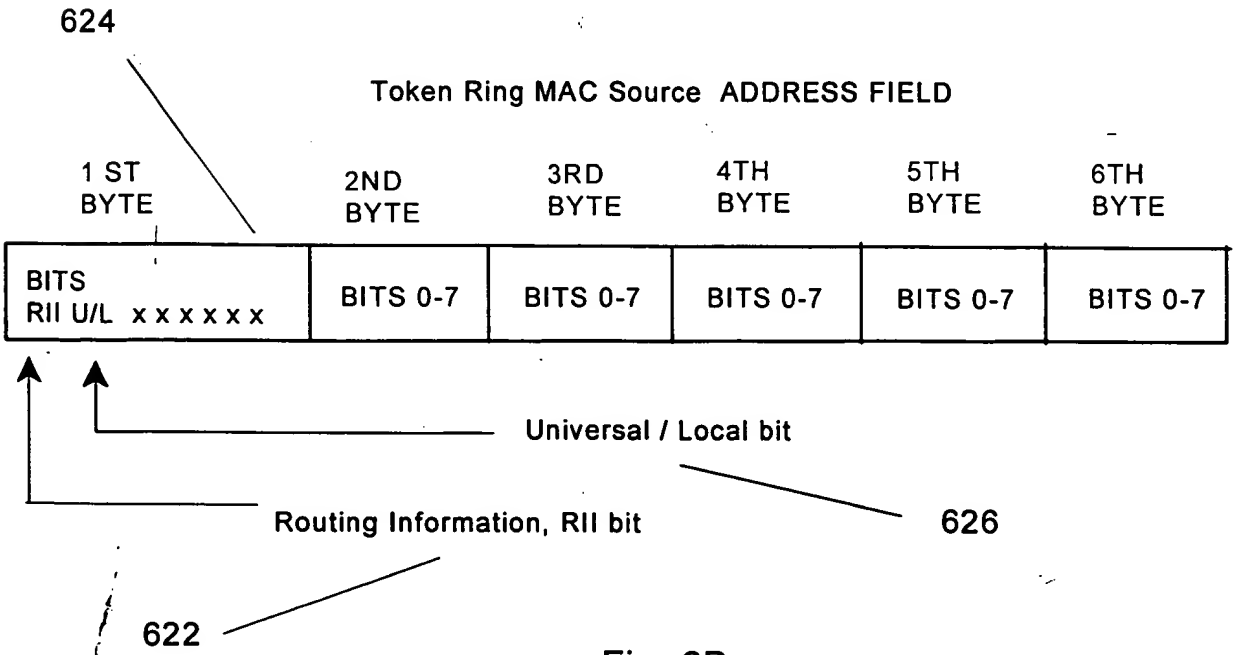


Fig. 6B

650

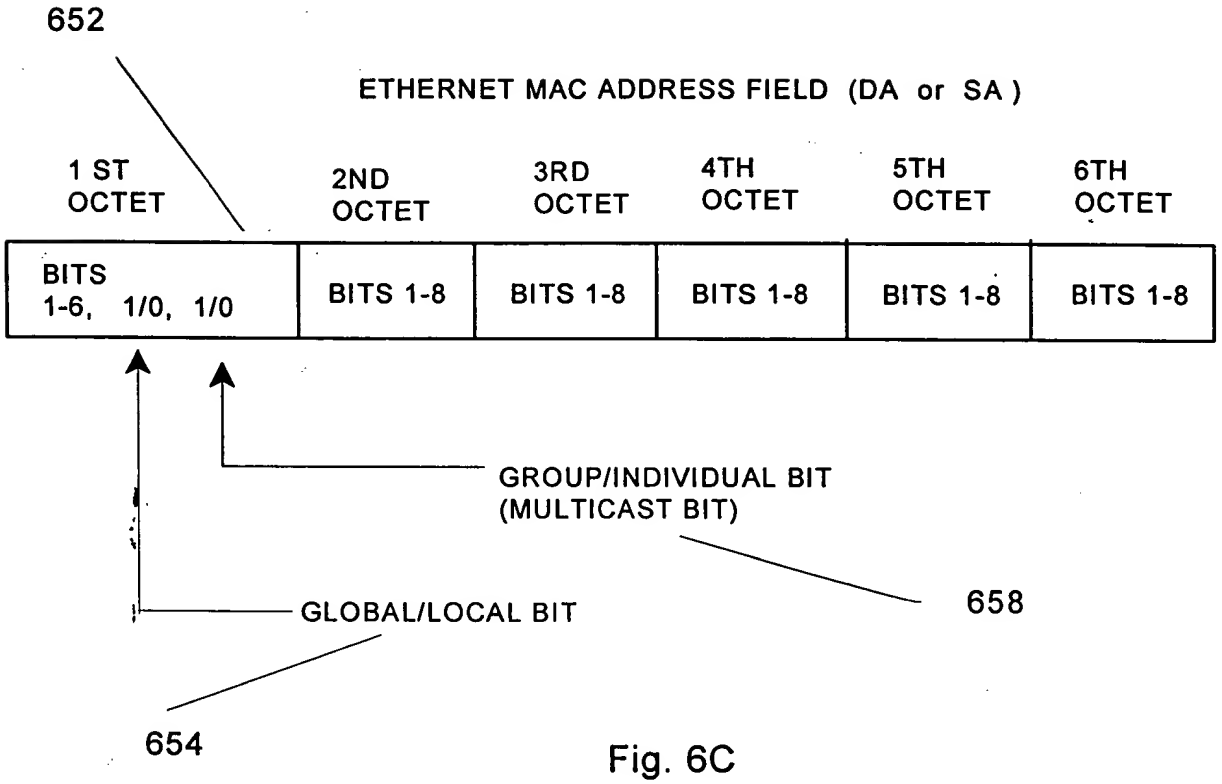

652
ETHERNET MAC ADDRESS FIELD (DA or SA)
1 ST OCTET
2ND OCTET
3RD OCTET
4TH OCTET
5TH OCTET
6TH OCTET
BITS 1-6, 1/0, 1/0
BITS 1-8
BITS 1-8
BITS 1-8
BITS 1-8
BITS 1-8
GROUP/INDIVIDUAL BIT (MULTICAST BIT)
658
GLOBAL/LOCAL BIT
654

Fig. 6C

700

RIF Field

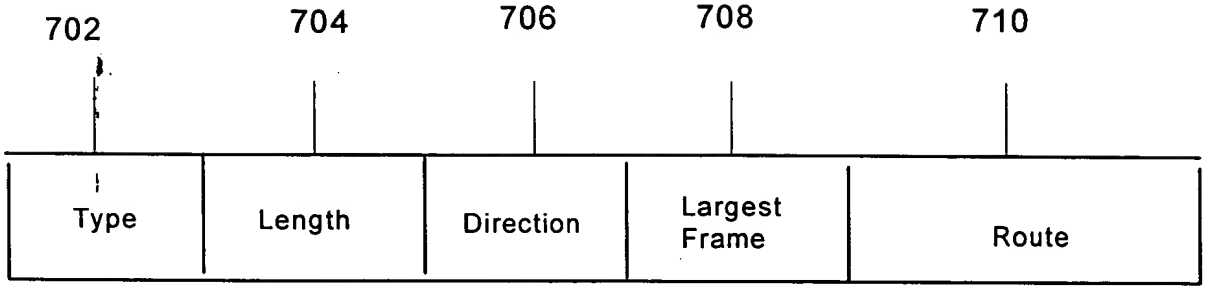


Fig. 7

800

112025-0116

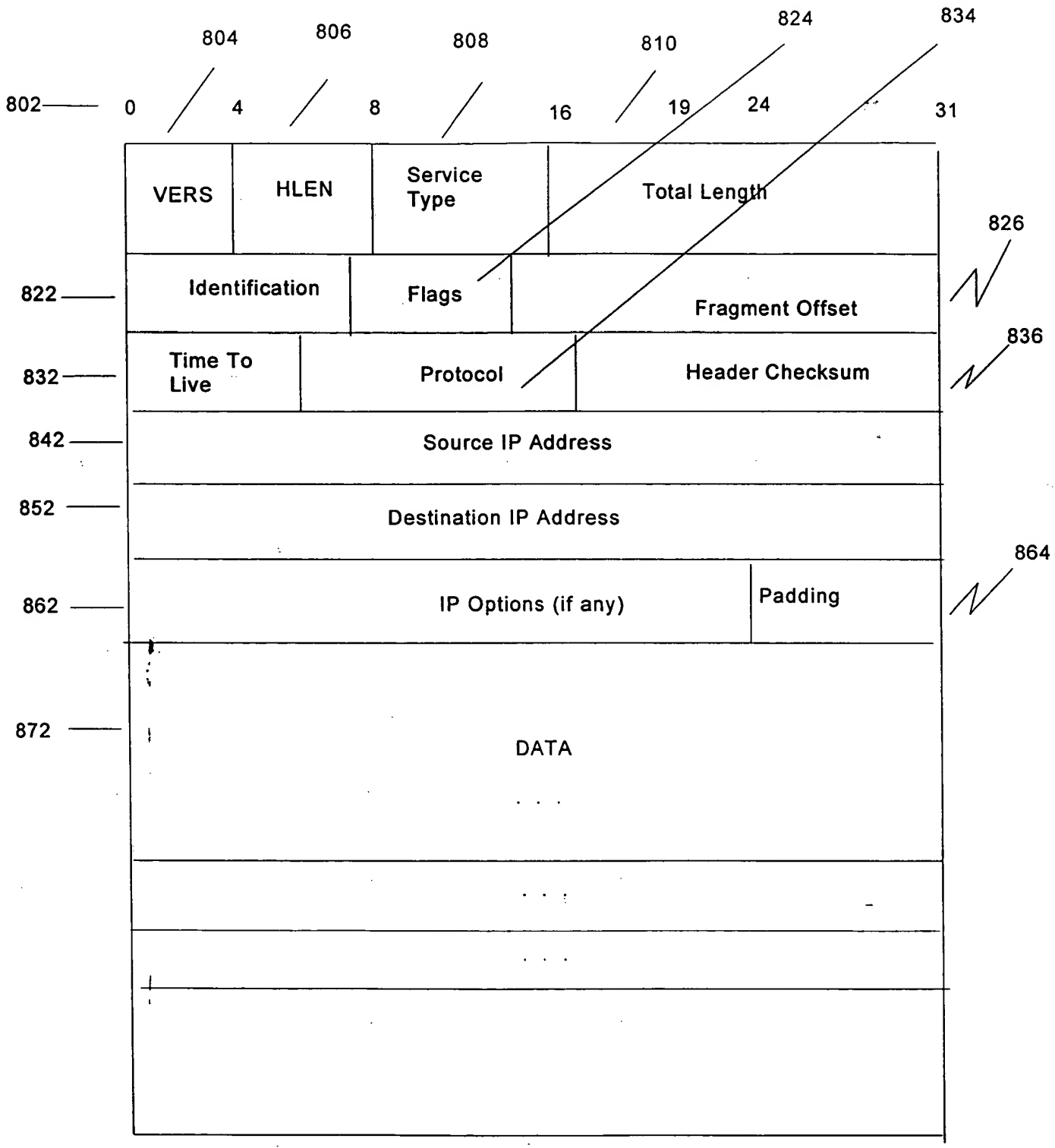


Fig. 8

900

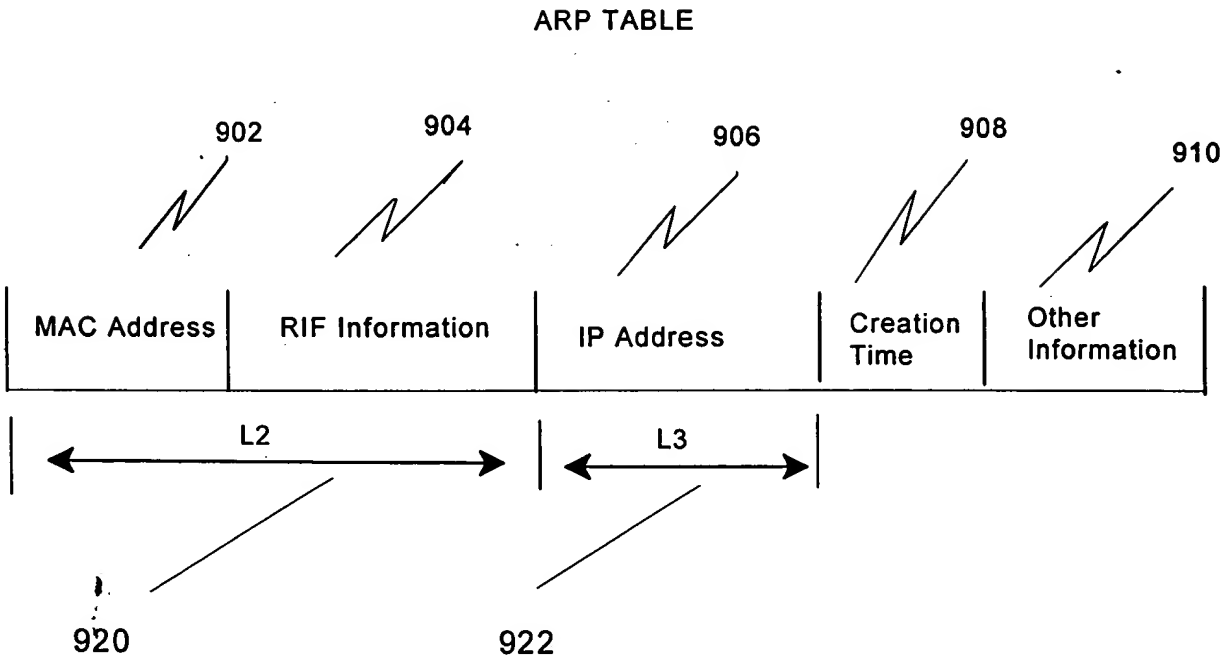

ARP TABLE
902
904
906
908
910
MAC Address
RIF Information
IP Address
Creation Time
Other Information
L2
L3
920
922

Fig. 9

10,000

ARP Table

	902 MAC Address	904 RIF Information	906 IP Address	908 Creation Time	910 Other Information
ESP1, Route					
ESP2, Route					
ESP3, Route					
etc.					
etc.					
ESPn, Route					

10,002
10,004
10,006
10,008
10,010

Fig.10

11,000

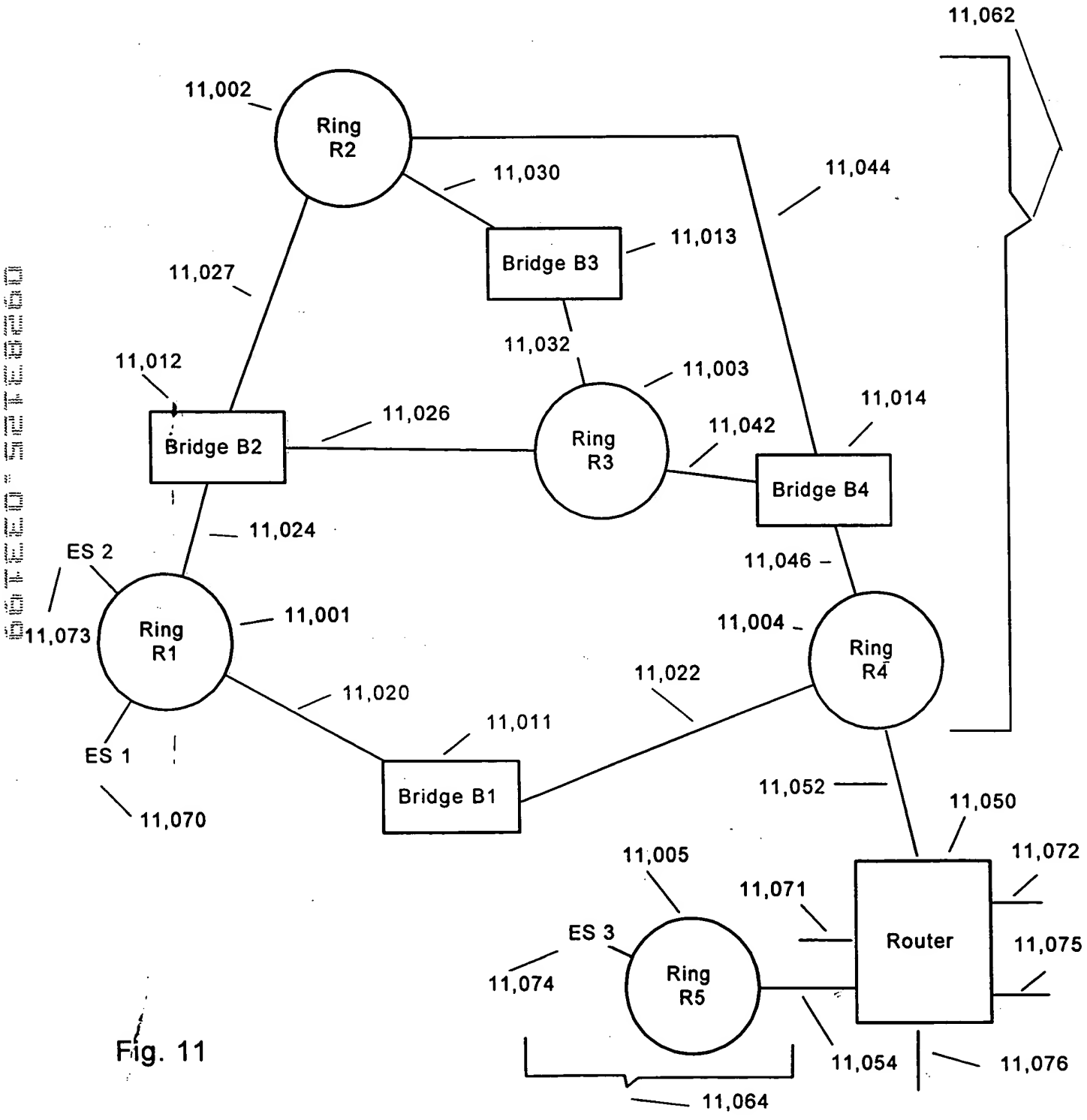

11,062
11,002
Ring R2
11,030
11,044
11,013
Bridge B3
11,027
11,032
11,012
11,003
11,026
Bridge B2
Ring R3
11,042
11,014
Bridge B4
11,024
ES 2
11,046
11,073
Ring R1
11,001
11,004
Ring R4
11,022
11,020
11,011
ES 1
Bridge B1
11,052
11,050
11,005
11,072
11,071
ES 3
Router
11,075
11,074
Ring R5
11,054
11,076
11,064
11,070

Fig. 11

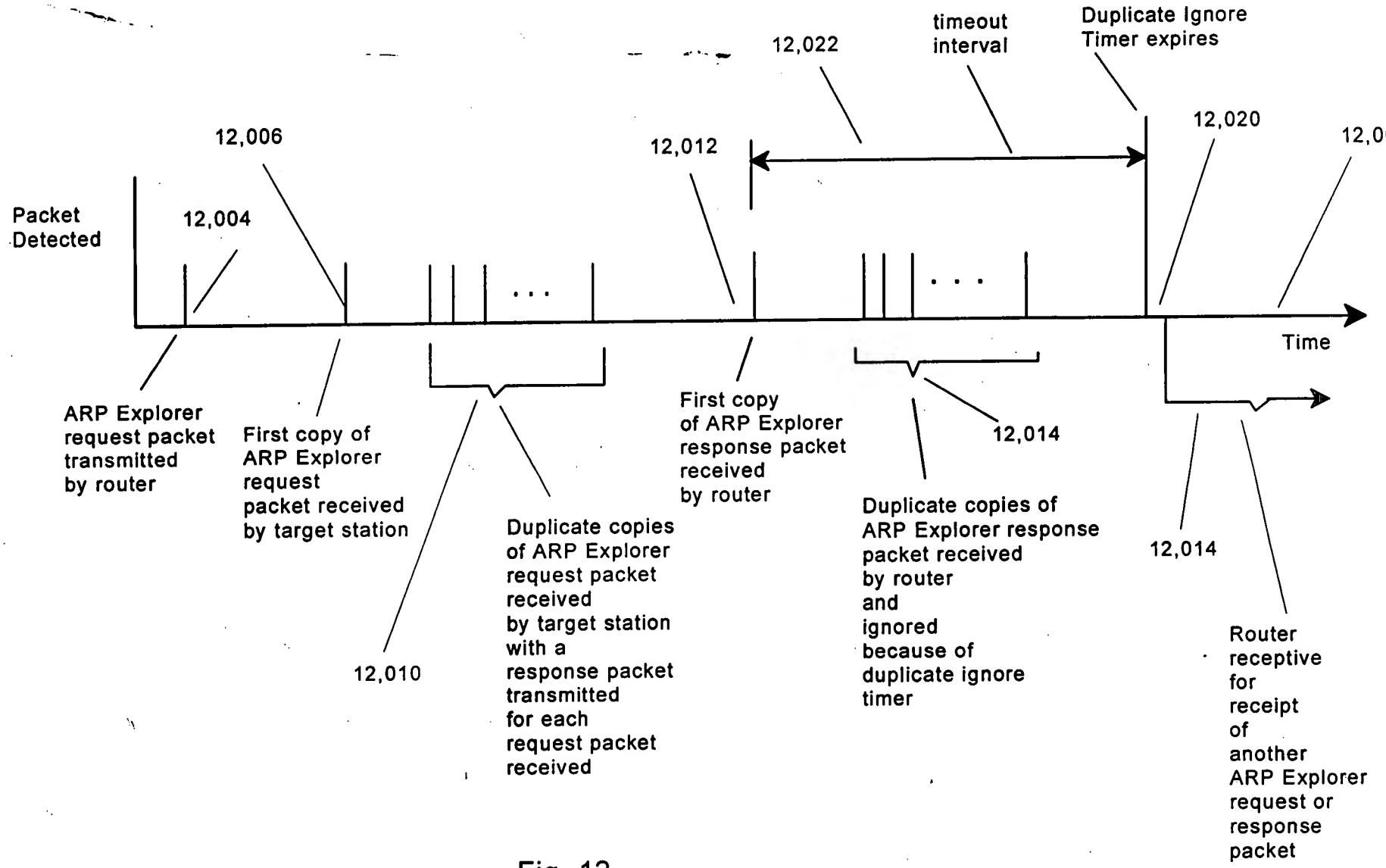

12,022
timeout interval
Duplicate Ignore Timer expires
12,020
12,002
12,006
12,012
Packet Detected
12,004
Time
ARP Explorer request packet transmitted by router
First copy of ARP Explorer request packet received by target station
12,010
Duplicate copies of ARP Explorer request packet received by target station with a response packet transmitted for each request packet received
First copy of ARP Explorer response packet received by router
12,014
Duplicate copies of ARP Explorer response packet received by router and ignored because of duplicate ignore timer
12,014
Router receptive for receipt of another ARP Explorer request or response packet

Fig. 12

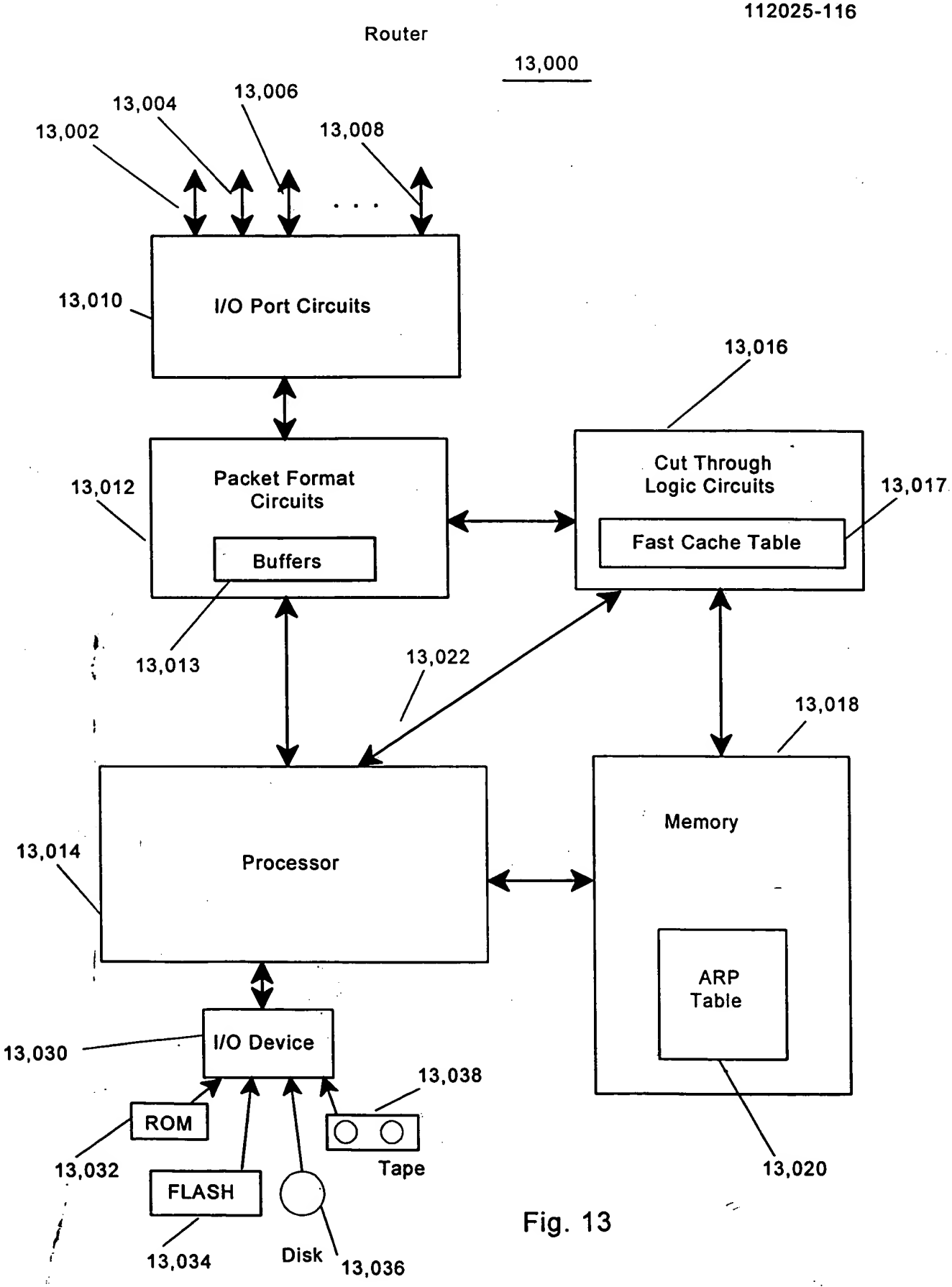

Router
13,000
13,002
13,004
13,006
13,008
13,010
I/O Port Circuits
13,012
Packet Format Circuits
Buffers
13,013
13,016
Cut Through Logic Circuits
Fast Cache Table
13,017
13,022
13,018
Memory
ARP Table
13,020
13,014
Processor
13,030
I/O Device
13,038
ROM
13,032
FLASH
13,034
Disk
13,036
Tape

Fig. 13